

Federation of Earth Science Information Partners Partnership Application

Please complete all sections to the fullest extent possible and forward completed application to: Carol Meyer, carol.meyer@earthsciencefoundation.org. If you have any questions, please contact her at 877.870.3747.

I. CONTACT INFORMATION

A. Primary Contact/Principal Investigator

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B. Designated Assembly Representative (could be same as above)

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C. Other Contacts

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II. ABOUT YOUR ORGANIZATION

A. ORGANIZATION/DIVISION/PROJECT NAME:

The HDF Group

B. OVERVIEW OF YOUR PRIMARY ACTIVITIES (250 words or less)

The HDF Group (THG) is a not-for-profit “spin-off” company from the National Center for Supercomputing Applications (NCSA) at the University of Illinois, Urbana-Champaign. The THG staff are the same group that created the “Hierarchical Data Format” or HDF, in 1988. Two HDF formats exist, and both are among the premier scientific data formats in the world, and serve as the standard for many large projects and organizations. For example, The HDF Group commenced collaborations with National Aeronautics and Space Administration (NASA) to use HDF as the standard format for the core data collection system employed in research on global climate change. Today, HDF technologies span both science and industry, with over 200 different types of applications using HDF. Scientific disciplines such as physics, cosmology, engineering, and meteorology rely on HDF technologies, while public and private sector use of HDF ranges from physics to film-making.

The creation of THG is designed to ensure the sustainable development of HDF technologies and the ongoing accessibility of HDF-stored data. THG will continue to support the same organizations and projects that it has supported at NCSA, such as NASA’s Earth Observing System and the DOE’s Advanced Simulation and Computing project.

C. Please list and briefly describe the primary product(s) or service(s) that your organization provides (will provide) to the community.

The HDF technologies include two data management formats (HDF4 and HDF5) and libraries, a modular data browser/editor, associated tools and utilities, and a conversion library.

- **HDF4** is a library and multi-object file format for the transfer of graphical and numerical data between machines. NASA HDF-EOS2 library is built on top of HDF4 library.
- **HDF5** is a general purpose library and file format designed to store, access, manage, exchange, and archive diverse, complex data in continuously evolving heterogeneous computing and storage environments. NASA HDF-

EOS5 library is built on top of HDF5 library. National Polar Orbiting Environmental Satellite System (NPOESS) uses HDF5 as the data format for the real time data products.

The HDF Group currently maintains and releases both HDF4 and HDF5 libraries, HDF4 and HDF5 command line utilities on most computing platforms. The HDF Group also develops and maintains HDFVIEW, a Java tool, that can browse and edit both HDF4 and HDF5 data.

One goal of establishing The HDF Group is to ensure the sustainable development of HDF technologies and the ongoing accessibility of HDF-stored data. The HDF Group thrives to provide best quality service to Earth Science HDF users by

- giving high-priority Q&A towards NASA earth science users
- providing annual HDF Earth Science user workshop to educate and hear feedback from Earth Science users
- attending various Earth Science data user workshops and conferences

D. Please give a main website address for the proposed Partnership:

Web Address: <http://hdfgroup.org>

III. HOW YOUR ORGANIZATION WILL BENEFIT FROM/CONTRIBUTE TO THE EARTH SCIENCE INFORMATION PARTNERS (ESIP) FEDERATION

- A. Describe current or anticipated users of your products and services and how you think the Federation can help you better serve this population. (200 words or less)

We expect there are at least one million HDF-EOS users all over the world. We expect more NPOESS users in the future. Most of them are Earth Science researchers/developers etc.

We noticed that our collaborators Unidata Program and OPeNDAP Corporation are already partners of ESIP Federation and our significant funding sponsor NASA is also the sponsor of ESIP Federation. Therefore, we are confident that once we become a partner of the ESIP federation the broad Earth Science data users will benefit through this addition channel to reach the Earth Science community.

- B. Describe any Earth science technologies that you have developed and are willing to bring to the Federation's efforts to provide best-practices. (200 words or less)

In both HDF and HDF5, the data chunking technology can help improve data access performance when subsetting big array data. The in-memory compression filters can help efficiently reduce the file size on disk.

In HDF5, the flexible data model makes the complicated earth science application easy to handle HDF5 data. The parallel IO technology makes the huge scientific applications efficiently read and write data.

NetCDF4, collaboration between The HDF Group and Unidata Program can potentially make many NetCDF Earth Sciences applications easily use the existing high-performance technology inside HDF5.

A new collaboration between The HDF Group and OPeNDAP Corporation will implement the HDF5-OPeNDAP data server, which can serve HDF5 Earth Science users to conveniently access HDF-EOS5 data through internet.

- C. Describe how your proposed membership would contribute to the efforts and the mission of one or more standing committees, working groups and/or clusters. See Page 3 for descriptions of the different activities of the various standing committees, working groups, and clusters. (200 words or less)

Based on our close collaborations with Unidata Program and OPeNDAP corporation, we are confident that we can significantly contribute to *Information Technology and Interoperability Committee*. For instance, we believe that by joining in this committee, newly-added HDF5 features can be quickly adopted by Earth Science community. On the other hand, the precious feedbacks from the

federation about HDF technologies can be timely grasped by the HDF group to improve the HDF technologies.

Working with NASA, the HDF group has conducted annual HDF and HDF-EOS Earth Science user workshop since 1996. This may be a valuable contribution to *Education Committee*.

The HDF Group can also be a potential contributor to *Products and Services Committee*.

D. Describe your own use of Earth science information and data and how you would see this use enhanced by your partnership in the Federation. (200 words or less)

The HDF Group primarily provides technologies for Earth science users. We have also used Earth Science technologies such as OPeNDAP and Weather Forecasting Model(WRF) to verify and improve our products. Although it is true that many Earth Science applications are using HDF technologies, it is also true that many Earth Science applications are seeking new technologies to solve their special IO problems impeded by the lack of channel to pass their requests to the technology providers like the HDF Group. We believe that ESIP federation can provide such a channel to fully take advantage of the HDF Group expertise for IO technologies.

IV. YOUR CHOICE OF MEMBERSHIP TYPE. PLEASE PICK ONE.

- | | |
|-------------------------------------------------|----------------------------------|
| ESIP-I (primarily a data archive center) | <input type="radio"/> |
| ESIP-II (primarily a research center) | <input checked="" type="radio"/> |
| ESIP-III (primarily applications and education) | <input type="radio"/> |
| ESIP-IV (primarily a sponsoring member) | <input type="radio"/> |

V. Any other comments about your proposed membership and its relation to the Federation that you wish to provide.

We truly believe that if we become a partner of the ESIP Federation, the Earth science community can be benefited more by the already widely used HDF technologies.

Thank you for your application for partnership in the ESIP Federation.

List of Federation Committees and Clusters

Administrative Committees

Executive Committee: Comprised of all standing and administrative committee chairs, ESIP Type Representatives, the President and Vice President of the Federation. Oversight body for most day-to-day activities of the Federation, acts on behalf of the Assembly between meetings.

Constitution and Bylaws: Provides counsel on matters related to the constitution and bylaws and other related issues (e.g. amendments to government documents)

Finance and Appropriations: Oversees financial resources of the Federation, including the annual budgeting process.

Partnership: Reviews and processes all applications for membership before making applications available for review by members of the Federation. Deals with other membership-related issues.

Standing Committees:

Commercial Development: Promotes a forum wherein commercial development of Earth science information can be fostered.

Community Engagement: Provides a forum for the Federation to promote partner products and to engage new users for data products and services.

Education: Provides a forum to make accessible to educators and learners at all levels in both formal and informal educational contexts the Earth science data, information, tools, and curricula available within the ESIP Federation.

Information Technology and Interoperability: Provides a forum for discussing information technology and interoperability issues of the Earth science community and serves as a central point for activities in this realm.

Products and Services: Provides a forum for defining best practices and defining requirements for earth science products and services. Currently is involved in developing an inventory of partner products and services.

Clusters (presently active, April 2005):

GIS

Intelligent Systems

Air Quality